



U.S. Department of Energy  
Office of River Protection  
Mr. R. J. Schepens  
Manager  
P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

CCN: 100481

OCT 07 2004

Dear Mr. Schepens:

**CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL OF DECISION TO DEVIATE FROM THE AUTHORIZATION BASIS FOR THE HANFORD TANK WASTE TREATMENT AND IMMOBILIZATION PLANT (24590-LAW-DTD-ENS-04-0003, REVISION 0)**

Reference: CCN 090786, Letter, from J. P. Henschel, BNI, to R. J. Schepens, ORP, "Transmittal for Approval: Authorization Basis Amendment Request 24590-WTP-SE-ENS-04-099, Revision 0, *Proposed Controls to Prevent Releases Associated with Water Addition to LAW Melters*," dated June 25, 2004.

The purpose of this letter is to provide notification to the U.S. Department of Energy (DOE), Office of River Protection (ORP) of a decision to deviate (DTD) from the authorization basis for the Hanford Tank Waste Treatment and Immobilization Plant. This DTD is being processed in accordance with the Preliminary Safety Analysis Report (PSAR) and project procedures. This letter satisfies the 72-hour written notification requirement.


Authorization Basis Amendment Request (ABAR) 24590-WTP-SE-ENS-04-099, Revision 0, was submitted to ORP via the Reference. The ABAR incorporated the results of an Integrated Safety Management review of water addition to Low-Activity Waste (LAW) melters and subsequent changes to control strategies in the LAW PSAR. Since ABAR 24590-WTP-SE-ENS-04-099 is not yet approved by DOE, a DTD is necessary to allow for the installation of the flow limiting valves on the inlet and discharge cooling water lines for the melter feed nozzle-cooling jackets. The ABAR contains descriptive information that would be useful to DOE in the evaluation of this DTD.

DTD 24590-LAW-DTD-ENS-04-0003, Revision 0, describes a deviation from the *Preliminary Safety Analysis Report to Support Construction Authorization; LAW Facility Specific Information*, 24590-WTP-PSAR-ESH-01-002-03, Revision 1. To reconcile this DTD, approval of ABAR 24590-WTP-SE-ENS-04-099, Revision 0, is requested by November 30, 2004.

Safety Evaluation 24590-WTP-SE-ENS-04-0178, Revision 0, is included as an attachment to the DTD.

This DTD will be tracked in the Recommendation and Issues Tracking System to ensure attention to process and closure schedules. Please contact Mr. Mark Platt at 371-3365 for any questions or comments on this transmittal.

Very truly yours,



J. P. Henschel  
Project Director

MP/es

Attachment - Decision to Deviate 24590-LAW-DTD-ENS-04-0003, Revision 0, plus  
accompanying Safety Evaluation 24590-WTP-SE-ENS-04-0178, Revision 0

cc:

Armstead, J. M. w/o	WTP	MS14-3B
Beranek, F. w/o	WTP	MS4-A1
Clements, W. w/o	WTP	MS12-2A
DOE Correspondence Control w/a	ORP	H6-60
Eschenberg, J. w/a	ORP	H6-60
Garrett, R. L w/o	WTP	MS4-A1
Henschel, J. P. w/o	WTP	MS14-3C
Medsker, M. w/a	WTP	MS12-2B
Miller, L. F. w/a	ORP	H6-60
PDC w/a	WTP	MS11-B
Pisarcik, D. J. w/a	WTP	MS4-A2
Platt, M. A. w/a	WTP	MS4-B1
Rogers, C. E. w/o	WTP	MS414-3C
Ryan, T. B. w/a	WTP	MS4-B1
Sautman, M. T. w/a	DNFSB	A5-17
Short, J. J. w/o	ORP	H6-60
Spezialetti, W. R. w/o	WTP	MS4-B1
Sweeney, S. w/a	WTP	MS12-2B
Tosetti, R. J. w/o	WTP	MS4-A2

**Attachment to CCN 100481**

DECISION TO DEVIATE 24590-LAW-DTD-ENS-04-0003, REVISION 0  
PLUS ACCOMPANYING SAFETY EVALUATION 24590-WTP-SE-ENS-04-0178, REVISION 0



# Decision to Deviate from the Safety Envelope

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DTD No: 24590-LAW-DTD-ENS-04-0003

Rev No: 0

The approvers of this form have determined that it is critical to project progress to temporarily deviate from the safety envelope as allowed in RL/REG-97-13. This temporary situation will be corrected no later than 90 days from the date this form is approved by the Area Project Manager. Environmental and Nuclear Safety (E&NS) is responsible for notifying DOE verbally within 24 hours, and in writing (including a copy of this form) within 3 working days, after the DTD is approved.

Safety Evaluation No. 24590-WTP-SE-ENS-04-0178, Rev 0

**Identify the specific design changes that are not in compliance with the safety envelope (include the document numbers of affected design documents).**

The specific design changes, which are not in compliance with the safety envelope, are described in 24590-WTP-SE-ENS-04-099 Rev 0 "LAW PSAR Changes to Address Inadvertent Water Addition to a LAW Melter".

Affected Design Documents		
Number	Rev.	Title
24590-LAW-M6-LMP-00012	3	Melter 1 Feed Nozzles Cooling System and Feed Nozzles
24590-LAW-M6-LMP-00042	3	Melter 2 Feed Nozzles Cooling System and Feed Nozzles

Planned Design Documents*		
Number	Rev.	Title
24590-LAW-M6-LMP-00012	4	Melter 1 Feed Nozzles Cooling System and Feed Nozzles
24590-LAW-M6-LMP-00042	4	Melter 2 Feed Nozzles Cooling System and Feed Nozzles

\* These documents have not been issued at the time the DTD is issued, but it is anticipated these will be issued during the 90-day window.

**Describe the specific deviation from the safety envelope associated with implementing the change. Identify the AB document(s) and the affected section(s).**

The specific deviation from the safety envelope is delineated in 24590-WTP-SE-ENS-04-099 Rev. 0, recommending the addition of ITS flow limiting valves in both the inlet and discharge of the cooling water lines to the feed nozzles cooling jackets. These valves will limit the flow of water into the Melter plenum in case of a catastrophic failure of a feed nozzle cooling jacket. This document requests to proceed with the installation of the above mentioned ITS flow limiting valves.

See attached Safety Evaluation 24590-WTP-SE-ENS-04-0178, Rev.0.

Affected AB Documents			
Number	Rev.	Title	Section
24590-WTP-SE-ENS-04-099	0	LAW PSAR Changes to Address Inadvertent Water Addition to a LAW Melter	Not determined

In addition to the Safety Evaluation referenced above, perform an evaluation to determine the following:

- ☒ The specific design changes do not cause or threaten imminent danger to the workers, the public, or the environment from radiological, nuclear, or chemical hazards.



# Safety Evaluation For Design

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Safety Evaluation No.:	24590-WTP-SE-ENS-04-0178	Rev. # 0
EDR No.:	N/A	Rev. # N/A
Design Documents Evaluated:	24590-LAW-DTD-ENS-04-0003	Rev. # 0
Consists of Parts:	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2	
Title: Installation of Flow Limiting Valves on the Cooling Water Lines to the LAW Melter Feed Nozzle Cooling Jackets		

## Part 1 Safety Evaluation

Complete Part 1 for all design changes requiring this form. Refer to Appendix 4 of 24590-WTP-GPP-SREG-002 for guidance. Part 1 determines whether the design change requires an ABAR. For all questions, provide a "Basis" for the answer in sufficient detail that a knowledgeable individual can identify the technical issues considered and the basis for the determinations. If the answer to questions 2, 3, or 4 is "Yes", an ABAR is required. "Broad scope" and SRD changes also require an ABAR. A "Yes" answer to questions 5 or 6 means that the design change is unacceptable and must be withdrawn and re-engineered. For any change that does cause an SED change, prepare a redline markup of the applicable sections of that document. For BNI-approved changes, print the SE, sign, obtain concurrence signatures, including the affected FNS Supervisor or Regulatory Safety Manager, and return the form to the design document originator for forwarding to PDC with the evaluated design document. Provide a copy of an original of the completed SE and SED redline markup to the E&NS AB Coordinator.

*Note: The SED represents the currently approved PSAR safety envelope sections, plus approved changes.*

### Description of change:

This evaluation is for 24590-LAW-DTD-ENS-04-0003 to allow for the installation of the flow limiting valves on the inlet and discharge cooling water lines for the melter feed nozzle cooling jackets.

As part of the Conditions of Acceptance for the LAW PSAR contained within Appendix B of ORP/OSR-2003-22, *Safety Evaluation Report for Waste Treatment and Immobilization Plant (WTP) Preliminary Safety Analysis Report (PSAR) Update*, design features for mitigating the potential for steam explosions in the LAW melter and the results of the evaluation of the potential for water injection via wash water or feed nozzle cooling water must be included in the LAW PSAR (Section 5.2, item 2). An ABAR (24590-WTP-SE-ENS-04-099) has been prepared and submitted to DOE to comply with this Condition of Acceptance. ABAR 24590-WTP-SE-ENS-04-099 has proposed the addition of the flow limiting valves to ensure that water addition (steam) is within the design basis of the melter and offgas system.

The DOE Review of ABAR 24590-WTP-SE-ENS-04-099 has focused on one question related to the analysis of water/sulfate layer interactions. This issue is not related to the flow limiting valves on the cooling water lines to the melter feed nozzle cooling jackets. Therefore, addition of the valves prior to approval of the ABAR is safe and will not likely be altered when the ABAR is approved.

This safety evaluation is limited to the scope of the decision to deviate - installation of the ITS flow limiting valves on the cooling water lines for the melter feed nozzle cooling jackets.

		N/A	YES	NO
1.	Does the change affect the safety envelope (SRD and applicable facility SED[s]), or is it a "broad scope" change? (Do not answer this question if already answered on corresponding safety screening/EDR)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Basis: The addition of a control associated with the prevention of inadvertent water addition to the LAW melter upon a failure of a feed nozzle cooling jacket is a change that will affect the LAW safety envelope.			
2.	Does the change create a new DBE?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Basis: The change proposes adding a preventative control to an existing DBE (offgas release), but does not create any new hazards requiring an iteration of the design basis event selection process.			
3.	Does the change result in more than a minimal ( $\geq 10\%$ ) increase in the frequency or consequence of an analyzed DBE as described in the SED?		<input type="checkbox"/>	<input checked="" type="checkbox"/>



# Safety Evaluation For Design

Safety Evaluation No.:	24590-WTP-SE-ENS-04-0178	Rev. # 0
EDR No.:	N/A	Rev. # N/A

		YES	NO
	<b>Basis:</b> The current analysis for melter offgas releases is not impacted in consequences or frequency by the proposed change.		
4.	Does the change result in more than a minimal decrease in the safety functions of important-to-safety SSCs or change how a Safety Design Class, Safety Class, or Safety Significant SSC meets its respective safety function?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<b>Basis:</b> The additional control added to the LAW PSAR (as reflected in the LAW SED) is being put in place to protect the safety function of the melter offgas system from inadvertent water addition to a LAW melter. Therefore, these changes are judged to impact the manner of how the SDC melter offgas system meets its respective safety function of providing primary confinement of the melter offgas.		
5.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10 CFR 820, 830, and 835) or nonconformance with top-level safety standards (i.e., DOE/RL-96-0006)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<p><b>Basis:</b> The proposed changes are consistent with the rules for nuclear activities (10 CFR 820), nuclear safety management (10 CFR 830), occupational radiation protection (10 CFR 835), and top level radiological, nuclear, and process safety standards for the RPP-WTP (DOE/RL-69-0006).</p> <p>10 CFR 820, Procedural Rules for DOE Nuclear Activities, sets forth the procedural rules for conduct of persons involved in DOE Nuclear Activities, in particular to achieve compliance with DOE nuclear safety requirements. The proposed changes are not related to any compliance, violation, or enforcement issue; exemption from safety requirements; or reporting of supplier defective products or inaccurate or incomplete information.</p> <p>10 CFR 830, Nuclear Safety Management, requires establishment and maintenance of safety bases and classifier QA work process requirements applicable to standards and controls adopted to meet regulatory or contract requirements that may affect nuclear safety. This included certain aspects of technical safety requirements (TSRs), unreviewed safety questions (USQs) and their process, documented safety analysis (DSAs), hazard control, major modifications, facility safety classified SSCs, and the quality assurance program (QAP). The proposed changes do not challenge any requirements of 10 CFR 830.</p> <p>10 CFR 835, Occupational Radiation Protection, set forth rules to establish radiation protection standards, limits, and program requirements for protecting individuals from radiation resulting from conduct of DOE activities. The proposed changes do not challenge any requirements of 10 CFR 835.</p>		
6.	Does the change fail to provide adequate safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<b>Basis:</b> ABAR 24590-WTP-SE-ENS-04-099 has been prepared and submitted to DOE to cover the impacts of adding controls dealing with inadvertent water addition on the LAW safety envelope. The DOE Review of ABAR 24590-WTP-SE-ENS-04-099 has focused on one question related to the analysis of water/sulfate layer interactions. This issue is not related to the flow limiting valves on the cooling water lines to the melter feed nozzle cooling jackets, which are being added to the design to control potential bulk water additions to the melter. Controlling bulk water additions to the melter will ensure that the melter and offgas system can perform their intended safety functions. This DTD allows for the installation of flow limiting valves on the cooling water lines to the melter feed nozzle cooling jackets. The project risk associated with installation of the flow limiting valves is considered to be minimal.		



# Safety Evaluation For Design

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Safety Evaluation No.:	24590-WTP-SE-ENS-04-0178	Rev. # 0
EDR No.:	N/A	Rev. # N/A

Affected Authorization Basis and/or SED Documents:			
Title	Document Number	Rev	Section
N/A	N/A	N/A	N/A

Safety envelope change required? ☐ Yes ☒ No  
ABAR required? ☐ Yes ☒ No

*Sign below and return form to design document originator. If an ABAR is required, sign Part 1, complete Part 2, and submit both to the E&NS AB Coordinator.*

Safety Evaluation Preparer:	<u>Christopher Lindquist</u> <small>Print/Type Name</small>	<u><i>Christopher Lindquist</i></u> <small>Signature</small>	<u>9/30/2004</u> <small>Date</small>
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Design Document Originator/Supervisor	<u>Sid Sourani</u> <small>Print/Type Name</small>	<u><i>SS</i></u> <small>Signature</small>	<u>9/30/2004</u> <small>Date</small>
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*Signature of Originator/Supervisor concurs that description of change is accurate and complete*

FNS Supervisor or Regulatory Safety Manager:	<u>Mark Medsker</u> <small>Print/Type Name</small>	<u><i>Mark A. Medsker</i></u> <small>Signature</small>	<u>9/30/04</u> <small>Date</small>
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Attachments:

No page changes are required for this proposed change. Page changes associated with the addition of the flow limiting valves on the cooling water lines to the melter feed nozzle cooling jackets are covered in ABAR 24590-WTP-SE-ENS-04-099.